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Fires in the Wildland/Urban Interface

FINDINGS

- Development in the wildland/urban interface is growing. In the Western U.S. alone, 38% of new home construction is adjacent to or intermixed with the WUI.
- A dichotomy exists in dealing with WUI fires. On the one hand, environmentalists and foresters believe that a natural fire (or even a prescribed burn) is healthy for our forests. On the other hand, homeowners in these areas expect fire protection of their structures.
- WUI fires pose great challenges to the fire service. Fire-fighting tactics for wildland fires differ considerably from those in structures; access to homes and availability of water are often limited in WUI areas.
- Fire prevention programs in WUI areas are extremely important. And homeowners must accept a measure of responsibility and be fully aware of the risks when deciding to locate in such an environment.

Current population growth and the expanding development of North America into traditionally nonurban areas have increasingly brought humans into contact with wildfires. Between 1985 and 1994, wildfires destroyed more than 9,000 homes in the United States.¹ Generally, these homes were located in areas "where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels,"² also known as the wildland/urban interface or intermix (WUI).

Both the definition and the development of the WUI are controversial subjects for government officials, developers, and the fire service. By one account, nearly 38% of new home construction in the Western

United States is on properties adjacent to or intermixed with WUI.³ Nationally, the continuing development of the WUI raises serious public policy and land use issues. Agencies at the local, state, and federal levels need to work together to define areas as being in the WUI and then to find ways to provide services, including fire protection, to developments on these lands. Moreover, individual communities and homeowners must be willing to accept a high degree of responsibility for protecting their homes from wildfire.

This report examines the socioeconomic implications of WUI fires, the unique challenges such fires pose to the fire service, and WUI fire prevention programs.

SOCIOECONOMIC EFFECTS OF WUI FIRES

Historically, WUI fires have caused significant property loss. One of the most destructive fires occurred in October 1991 when 25 lives were lost and more than 3,000 structures were destroyed by a WUI fire in the East Bay Hills of Oakland, CA. The fire completely overwhelmed the firefighting forces of the area and consumed nearly everything in its path.⁴ WUI fires are not only a problem in Western states. In the summer of 1998, wildfires destroyed nearly 500,000 acres and hundreds of structures throughout Florida. Nearly 7,000 firefighters and military personnel from across the nation participated in the fire suppression effort, which ultimately cost between \$620 and \$890 million.⁵

FIRE SUPPRESSION IN THE WUI

Fire suppression in the WUI has become a highly controversial issue in the fire service. Some have even gone so far as to argue that it is not appropriate for publicly funded fire suppression personnel to be required to protect homes built in a high-risk area when those personnel can be better utilized elsewhere.⁶ Despite the controversy, firefighters are still called on to fight fires in the WUI. These fires pose serious technical challenges to the fire service.

Firefighting Tactics: On a basic level, the tactics of structural and wildland firefighting are dramatically different. A major component of structural firefighting tactics is direct fire attack usually with water or foam. In wildland firefighting, however, personnel generally try to extinguish a fire indirectly by starving it of fuel, usually by surrounding it with a defensible perimeter of cleared land.

The training and equipment for structural and wildland firefighters have been adapted to support the tactical goals mentioned above. As a result, WUI fires challenge wildland firefighters because they are not trained in structural firefighting. By the same token, structural firefighters have limited training in wildland fire suppression.

Jurisdiction: Since fire does not adhere to jurisdictional boundaries and WUI fires require the expertise of both wildland and structural firefighters, firefighters from different agencies must work together to suppress fires in the WUI. This can create a variety of issues, from command and control to payment for services rendered. Also, confusion over jurisdictional boundaries or multijurisdictional operations can lead to reporting issues, as it may not be clear which jurisdiction is responsible for reporting the fire or to whom.

Access: Depending on the level of development, some areas may lack the transportation infrastructure required to allow fire department apparatus the access needed to protect homes. Roads may be too narrow or steep for fire trucks to navigate or bridges may not be able to support the trucks' weight.

Water Supply: An area's level of development and proximity to a municipal water system will directly affect the amount of water available to firefighters for suppression activities. Homes in areas without access to a municipal water system will be more difficult to defend and protect from wild-fire, as water will have to be brought to the site in tankers or by drawing from static water sources nearby.

WUI FIRE PREVENTION

Preventing fires costs significantly less than suppressing them. As a result, fire prevention efforts in the

WUI are crucial. With this observation, it is important to understand that fire plays an important role in wildland ecosystems; some plant species even depend on fire to propagate. For many years, however, the federal government advocated the suppression of all wildfires, regardless of size or location. Over time, these policies created a dangerous accumulation of vegetative fuels in our forests.

Foresters and other government officials are now struggling with how to reduce the amount of fuel in the forests. Some favor mechanically thinning the forests through logging and other means. Others support the use of prescribed burning, where officials deliberately set fires to clear out scrub and other brush to reduce the chance of wildfires. Prescribed burning, however, is highly controversial. In May 2000, a prescribed burn near Los Alamos, NM, "escaped" and caused nearly \$1 billion in property loss and damage.

A Wildland/Urban Interface Fire Protection Program identified four common components of interface fires: (1) Low relative humidity, high temperatures, and high winds often are in place before a fire starts. (2) Human activity such as arson, debris burning, or downed electrical wires cause many interface fires. (3) Many destroyed homes were constructed with combustible material or have especially vulnerable features such as wood shingle roofs. (4) Considerable combustible materials surround the home, such as woodpiles and fences.⁷

To highlight the importance of fire safety in the WUI, communities throughout the country have codified requirements for homeowners to construct and maintain their homes in a fire-safe manner. Other communities have considered tax

credits for homeowners as a means to encourage fire safety in the WUI. The insurance industry also has an important stake in protecting homes in the WUI; the Oakland Hills fires of 1991 alone caused nearly \$1.2 billion in insured property losses.⁸ As such, the industry has considered adjusting premiums based on the assessed level of wildfire risk for a particular property.

Despite these measures, new homeowners in the WUI often do not understand the risks associated with their environment and do not take the appropriate steps to protect their homes from wildfires. Protective steps include:

- Constructing homes with fire-resistant materials.
- Situating homes on lots so as to protect them from possible fire spread.

- Clearing a perimeter of defensible space around homes.
- Installing smoke alarms.
- Developing and practicing evacuation plans in the event of a wildfire.⁹

There is concern that homeowners in the WUI are receiving conflicting messages regarding fire prevention. On one hand, most prevention programs aimed specifically toward structure fires depict all fires as being undesirable and dangerous. However, wildfire prevention programs tend to underscore the fact that fire plays an important role in our ecosystem and can be a valuable tool in forest fuel management.

CONCLUSIONS

As the development of the WUI continues to widen, the problem of

fire in these areas is exacerbated and the need for training, prevention, and other programs to mitigate WUI fires is increased. Given the political, ecological, and economic implications of any decision affecting residents and homes in the WUI, this subject is likely to remain controversial for the foreseeable future.

For further information on fires in the WUI, contact the National Wildland/Urban Interface Fire Protection Program (www.firewise.org). Additional information is also available on the USFA website at <http://www.usfa.fema.gov/wildfire/>. If you live in the WUI and are seeking specific information about fire protection in your area, contact your local fire department.

Notes:

1. *The Wildland/Urban Fire Hazard*, Insurances Services Office, Inc., December 1997. (<http://www.iso.com/docs/stud009.htm>, January 8, 2002)
2. *Federal Wildland Fire Policy*, U.S. Department of Agriculture Forest Service, Chartered 1994, Revised 2001. (<http://www.fs.fed.us/land/wdfire7c.htm>, January 4, 2002)
3. *Wildland Fire Preparedness/Education Partnership*, Firewise Colorado, February 2001.
4. *The East Bay Hills Fire Oakland–Berkeley, California (October 19–22)*, Technical Report Series, U.S. Fire Administration, Federal Emergency Management Agency.
5. Grace, Sue and Wade, Dale, *Ecological and Economic Consequences of the 1998 Florida Wildfires*, Florida Department of Forestry, 2000.
6. Sampson, Neil, “Living With Nature: Are We Willing To Pay The Price?” *Wildfire News & Notes*, 1996
7. *The Wildland/Urban Fire Hazard*, op. cit.
8. *Fire in the United States: 1985–1994*, Ninth Edition, U.S. Fire Administration, Federal Emergency Management Agency, p. 195.
9. *Protecting Your Home From Wildfire*, National Wildland/Urban Interface Fire Protection Program. (<http://www.firewise.org/pubs/protect/step1.html>, December 27, 2001)